



National Center for Science and
Engineering Statistics

Survey

Survey of Federal Funds for Research and Development | 2022

The Survey of Federal Funds for Research and Development is an annual census of federal agencies that conduct R&D programs and the primary source of information about U.S. federal funding for R&D.

Survey Description

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Survey Overview (FYs 2021–22 survey cycle; volume 71)

Purpose

The annual Survey of Federal Funds for Research and Development (R&D) is the primary source of information about federal funding for R&D in the United States. The results of the survey are also used in the federal government's calculation of U.S. gross domestic product (GDP) at the national and state level, for policy analysis, and for budget purposes for the Federal Laboratory Consortium for Technology Transfer, Small Business Innovation Research, and the Small Business Technology Transfer. The survey is sponsored by the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF).

Data collection authority

The information is solicited under the authority of the National Science Foundation Act of 1950, as amended, and the America COMPETES Reauthorization Act of 2010.

Major changes to recent survey cycle

The survey was revised for volume 71. Many of the survey questions were reorganized and revised. The field of R&D (formerly "field of science and engineering") has been revised, a list of the 41 fields of R&D reported on can be found on the survey questionnaire. In the data tables, the fields are grouped into 9 major areas: computer and information sciences; geosciences, atmospheric sciences, and ocean sciences; life sciences; mathematics and statistics; physical sciences; psychology; social sciences; engineering; and other fields. Table A-3 provides a crosswalk of the fields of science and engineering used in volume 70 and earlier surveys to the revised fields of R&D collected in volume 71. The performer categories were revised for consistency with other NSF surveys, such as changes to the naming conventions; for example, industry is now called businesses. The [Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions](#) was integrated into this survey as a module. In addition, new questions were added that include details on R&D obligations for grants and contracts, interagency governmental transfers to other agencies for R&D, and obligations to University Affiliated Research Centers.

Key Survey Information

Frequency	Annual.
Initial survey year	1951.
Reference period	FYs 2021–22.
Response unit	Federal agencies.
Sample or census	Census.
Population size	The population consists of the 33 federal agencies that conduct R&D programs, excluding the Central Intelligence Agency (CIA).
Sample size	Not applicable; the survey is a census of all federal agencies that conduct R&D programs, excluding the CIA.

Key variables

Key variables of interest are listed below.

The survey provides data on federal obligations by the following key variables:

- Federal agency
- Federally funded research and development centers (FFRDCs)
- Field of R&D (formerly field of science and engineering)
- Geographic location (within the United States and by foreign country or economy)
- Performer (type of organization doing the work)
- R&D plant (facilities and major equipment)
- Type of R&D (research, development, test, and evaluation [RDT&E] for Department of Defense [DOD] agencies)
 - Basic research
 - Applied research
 - Development, also known as experimental development
- University-affiliated research centers

The survey provides data on federal outlays by the following key variables:

- R&D (RDT&E for DOD agencies)
- R&D plant

Note that the variables “R&D,” “type of R&D,” and “R&D plant” in this survey use definitions comparable to those used by the Office of Management and [Circular A-11](#), Section 84 (Schedule C).

Survey Design

Target population

The population consists of the federal agencies that conduct R&D programs, excluding the CIA. For the FYs 2021–22 cycle, a total of 33 federal agencies (14 federal departments and 19 independent agencies) reported R&D data.

Sampling frame

The survey is a census of all federal agencies that conduct R&D programs, excluding the CIA. The agencies are identified from information in the president’s budget submitted to Congress. The Analytical Perspectives volume and the “Detailed Budget Estimates by Agency” section of the appendix to the president’s budget identify agencies that receive funding for R&D.

Sample design

Not applicable.

Data Collection and Processing

Data collection

Synectics for Management Decisions, Inc. (Synectics) performed the data collection for volume 71 (FYs 2021–22) under contract to NCSES. Agencies were initially contacted by e-mail to verify the contact information of each agency-level survey respondent. A Web-based data collection system is used for the survey. Multiple subdivisions of some federal departments were permitted to submit information to create a complete accounting of the departments’ R&D funding activities.

Data collection for Federal Funds for R&D began in May 2022 and continued through December 2022.

Data processing

A Web-based data collection system is used to collect and manage data for the survey. This Web-based system was designed to help improve survey reporting and reduce data collection and processing costs by offering respondents direct online reporting and editing.

All data collection efforts, data imports, and trend checking are accomplished using the Web-based data collection system. The Web-based data collection system has a component that allows survey respondents to enter their data online; it also has a component that allows the contractor to monitor support requests, data entry, and data issues.

Estimation techniques

Published totals are created by summing respondent data, there are no survey weights or other adjustments.

Survey Quality Measures

Sampling error

Not applicable.

Coverage error

Given the existence of a complete list of all eligible agencies, there is no known coverage error. The CIA is purposely excluded.

Nonresponse error

There is no unit nonresponse. To increase item response, agencies are encouraged to estimate when actual data are unavailable. The survey instrument allows respondents to enter data or skip data fields. There are several possible sources of nonresponse error by respondents, including inadvertently skipping data fields or skipping data fields when data are unavailable.

Measurement error

Some measurement problems are known to exist in the Federal Funds of R&D data. Some agencies cannot report the full costs of R&D, the final performer of R&D, or R&D plant data.

For example, the DOD does not include headquarters costs of planning and administering R&D programs, which are estimated at a fraction of 1% of its total cost. DOD has stated that identification of amounts at this level is impracticable.

The National Institutes of Health (NIH) in the Department of Health and Human Services currently has many of its awards in its financial system without any field of R&D code. Therefore, NIH uses an alternate source to estimate its research dollars by field of R&D. NIH uses scientific class codes (based upon history of grant, content of the title, and the name of the awarding institute or center) as an approximation for field of R&D.

The National Aeronautics and Space Administration (NASA) does not include any field of R&D codes in its financial database. Consequently, NASA must estimate what percentage of the agency's research dollars are allocated into the fields of R&D.

Also, agencies are required to report the ultimate performer of R&D. However, through past workshops, NCSES has learned that some agencies do not always track their R&D dollars to the ultimate performer of R&D. This leads to some degree of misclassification of performers of R&D, but NCSES has not determined the extent of the errors in performer misclassification by the reporting agencies.

As of volume 71, all respondents are required to report R&D obligations by state and performer. Previously, this information was reported by 11 agencies (i.e., the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security, the Interior, and Transportation; the Environmental Protection Agency; NASA; and NSF). Obligations of these 11 agencies represent the majority of total federal R&D obligations (98% for FYs 2008–20). There is some underreporting by state, which may affect states unevenly. For example, geographic distribution of DOD development funding to businesses (formerly industry) reflects the location of prime contractors and not the numerous subcontractors who perform much of the R&D. DOD development funding to businesses represented 32.0% of total federal obligations for development in FY 2021 (\$33.3 billion of \$103.9 billion).

R&D plant data are underreported to some extent because of the difficulty some agencies, particularly DOD and NASA, encounter in identifying and reporting these data. DOD's respondents report obligations for R&D plant funded under the agency's appropriation for construction, but they are able to identify only a small portion of the R&D plant support that is within R&D contracts funded from DOD's appropriation for RDT&E. Similarly, NASA respondents cannot separately identify the portions of industrial R&D contracts that apply to R&D plant because these data are subsumed in the R&D data covering industrial performance. NASA R&D plant data for other performing sectors are reported separately.

Data Availability and Comparability

Data availability

Annual data are available for FYs 1951–2022.

Data comparability

Until the release of volume 71 (FYs 2021–22) the information included in this survey had been unchanged since FY 1973, when federal obligations for research to universities and colleges by agency and detailed field of science and engineering were added to the survey. Other variables (such as type of R&D and type of performer) are available from the early 1950s on. The volume 71 survey revisions maintained the four main R&D crosscuts (i.e., type of R&D, field of R&D [previously referred to as field of science and engineering], type of performer, and geographic area) collected previously. However, there were revisions within these crosscuts to ensure consistency with other NCSSES surveys. These include revisions to the fields of R&D and the type of performer categories (see Technical Notes, Table A-3 for a crosswalk of the fields of science and engineering to the fields of R&D). In addition, new variables were added, such as field of R&D for experimental development (whereas before, the survey participants had only reported fields of R&D [formerly fields of science] for basic research and applied research). Grants and contracts for extramural R&D performers and obligations to University Affiliated Research Centers were also added in Vol. 71.

Every time new data are released, there may be changes to past years' data because agencies sometimes update older information or reclassify responses for prior years as additional budget data become available. For trend comparisons, use the historical data from only the most recent publication, which incorporates changes agencies have made in prior year data to reflect program reclassifications or other corrections. Do not use data published earlier.

Data Products

Publications

NCSSES publishes data from this survey annually in tables and analytic reports available at [Federal Funds for R&D Survey page](#) and in the [Science and Engineering State Profiles](#).

Electronic access

Access to the data for major data elements are available in NCSSES's interactive data tool at <https://ncesdata.nsf.gov/>.